

Thyroid metastasis from clear cell renal carcinoma

Metástasis tiroidea por carcinoma renal de células claras

To the Editor:

Clear cell renal cancer (CCRC) is a tumor with great metastatic potential, but solitary metastases, especially in the thyroid gland, are uncommon and difficult to diagnose¹. A patient with a solitary thyroid metastasis from CCRC is reported, and the literature is reviewed.

The patient was a 66-year-old male patient with a history of high blood pressure, chronic renal failure, hyperuricemia, current smoking and moderate alcohol consumption, atrial fibrillation, and early cognitive impairment due to Alzheimer's disease. In 2005 the patient had undergone, at another hospital, left partial nephrectomy for a clear cell tumor. No subsequent adjuvant therapy was given, and abdominal ultrasound and computed tomography (CT) performed in April 2008 showed complete local remission. In October 2008, the patient attended the otolaryngology

clinic reporting dysphonia having started one month earlier, with no dysphagia or odinophagia, associated constitutional symptoms, and two cervical tumors also detected in the previous month, a 3-4 cm tumor in the right thyroid lobe (RTL) and a 2-3 cm tumor in the left thyroid lobe (LTL), both hard and adherent to deep planes. Laboratory test results were normal, except for a TSH value of 9 microIU/mL with normal T4 and antithyroid antibodies, and a creatinine level of 1.7 mg/dL. Direct laryngoscopy detected paralysis in the right vocal cord with no other lesions. CT revealed a heterogeneous cervical mass at the expense of the RTL with laryngotracheal displacement and retrosternal extension, with subcentimetric cervical adenopathies and internal jugular vein (IJV) thrombosis (Fig. 1). Fine needle aspiration (FNA) was not diagnostic due to the lack of cells. Positron emission tomography combined with CT showed thyroid uptake with a low suspicion of malignancy. Based on a preoperative diagnosis of locally advanced thyroid neoplasm with no histological confirmation, total thyroidectomy with lymph node removal from the central and right lateral compartments was decided.

Surgery performed in July 2009 found in the RTL a solid, whitish tumor adherent to adjacent tissues, approximately

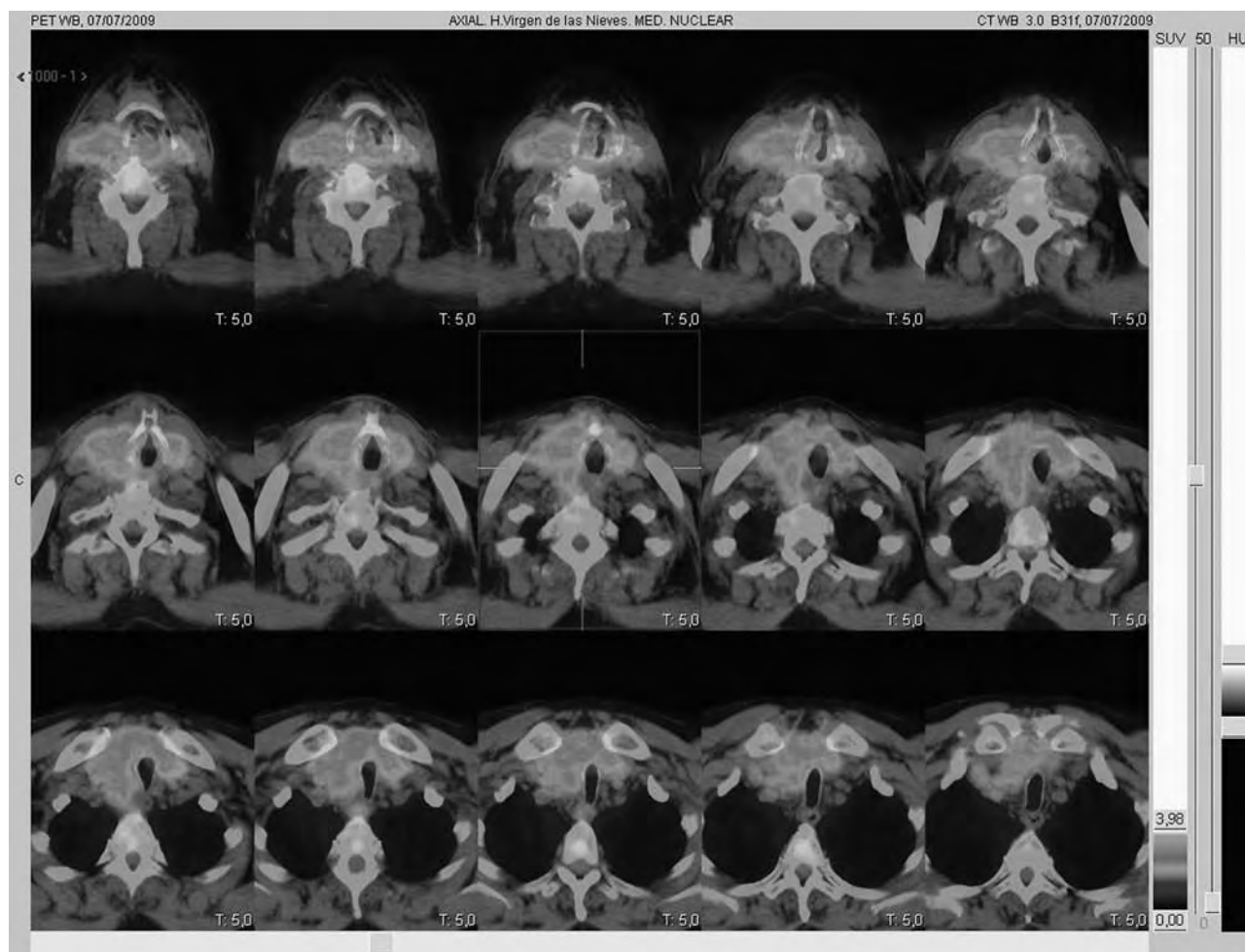


Figure 1 Cervical PET-CT image showing high uptake by a thyroid mass with infiltration of adjacent structures: trachea, esophagus, internal jugular vein, and prethyroid muscles.

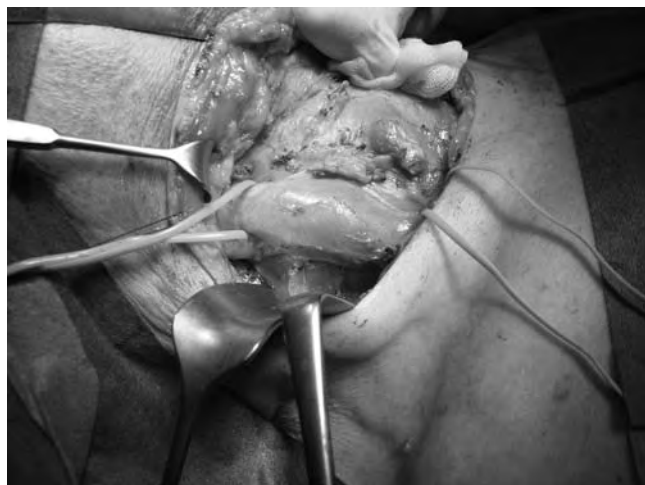


Figure 2 Internal jugular vein enlarged due to intramural thrombi.

6-7 cm in size, infiltrating the prethyroid muscles and a tumor plaque between the cricoid cartilage and the first tracheal ring. The LTL had a similar appearance but a smaller lesion. The IJG had several brownish, non-adherent thrombi inside (Fig. 2), as did most of the thyroid arterial and venous vessels and anterior jugular veins. The central and right lateral cervical compartments were emptied (levels II to IV) and IJG resection and total thyroidectomy were performed, including a large part of the right prethyroid and cricothyroid muscles, muscle fibers of the esophageal wall, and the right recurrent nerve, which was trapped inside the tumor.

A pathological study found metastases from CCRC (negative for thyroglobulin and thyroid transcription factor 1 (TTF-1), positive for clear renal cells) in both thyroid and perithyroid venous and arterial thrombotic lesions. No adenopathies were found.

Adjuvant therapy was ruled out, and the patient died six and a half months after surgery from septic shock of a respiratory origin in the setting of his neurological disease.

Clear cell renal tumor accounts for 3% of all malignant tumors in adults^{1,2}. It is a highly vascularized tumor with an unpredictable clinical progression and a high potential to metastasize to lung, liver, bone, and adrenal gland¹⁻⁴. The incidence of solitary CCRC metastases ranges from 1%-4%, and 1% of them involve the thyroid gland, although autopsy studies have reported a 24% rate¹⁻⁴. Approximately 150 cases have been reported in the literature^{1,5}. The tumors most commonly metastasizing to the thyroid gland include skin (39%), breast (21%), kidney (12%), and liver (11%) tumors^{1,5-7}.

Mean age at onset is in the sixth decade^{1,3}. Thyroid disease may either lead to diagnosis of CCRC or occur years after nephrectomy^{1,3,6,8}. The condition has no specific symptoms, and may occur as painless palpable nodules associated to compressive symptoms (dyspnea, dysphagia, dysphonia, stridor) or cause no symptoms^{1,4}. Thyroid function is usually preserved^{1,4}. The tumor appears as a hyper- or hypoechogenic mass in ultrasound examination, and as a cold or

exceptionally hot nodule in scintiscans^{2,6,8,9}. Isolated cytological study of the sample collected by FNA has a high specificity and a relatively good sensitivity⁸ (the presence of clear cells in the primary thyroid follicular carcinoma)¹⁰, and immunohistochemical procedures using thyroglobulin or TTF-1 antibodies are required^{1,6}. Bilateral thyroid involvement has been reported in 18% of cases, while invasion of adjacent vascular structures occurs in 11%^{3,4}. Clinical diagnosis of metastatic thyroid tumor is therefore difficult^{1,7}.

Survival depends on a disease-free period from nephrectomy to the occurrence of metastasis and on radical resection of the latter. Mean survival reported after resection of metastasis is 6.4 years^{1,6,7}.

In conclusion, a detailed clinical history is relevant for the diagnosis of solitary thyroid metastases from CCRC because of the non-specificity of supplemental tests. Only immunohistochemical study of the thyroidectomy specimen is valid. Preoperative diagnosis may be improved using immunohistochemistry for thyroglobulin on FNA samples from patients with a history of CCRC and thyroid nodules with an aggressive behavior. Surgical treatment has the highest survival rate, provided complete resection is possible.

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